

A Level Computer Science

Exam Style Questions

Unit 1.4.1

Data Types

Bitwise Manipulation

Name		Date	
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Score	Percentage	Grade
/ 8		

Question 1

The XOR operator can be used to encrypt data.

- a) Show the effect of applying XOR on **Text** and **Key**, by completing the last row of the table below.

Text	O								C								R							
Value	0	1	0	0	1	1	1	1	0	1	0	0	0	0	1	1	0	1	0	1	0	0	1	0
Key	A								B								C							
Value	0	1	0	0	0	0	0	1	0	1	0	0	0	0	1	0	0	1	0	0	0	0	1	1
XOR																								

[2]

- b) Show the effect of applying XOR on your answer to part (a) and **Key**, by completing the first and last rows of the table below.

(a)																								
Key	A								B								C							
Value	0	1	0	0	0	0	0	1	0	1	0	0	0	0	1	0	0	1	0	0	0	0	1	1
XOR																								

[2]

Question 2

00001100 is shifted two places to the left.

- a) Show the result.

[1]

- b) Identify what arithmetic operation this shift is equivalent to.

[1]

Question 3

Explain how, using bit shift, the unsigned binary number 00101100 can be divided by 4.

[2]